

EXPLANATION OF PLATE II.

(All the figures drawn under camera lucida.)

Fig. 1. *Syrphus pyrastris* ♂, from a specimen taken by the author at Laggan, Alberta. Note the swollen frons, and the area of large facets, indicated by the dotted line.

Fig. 2. *Syrphus seleniticus*, ♂, a European specimen sent me by Prof. Bezzi.

Fig. 3. *Syrphus arcuatus* ♂, a specimen sent me from British Columbia by Mr. B. G. Elliott. The demarkation of the area of facets is the greatest I have noticed in this species.

Fig. 4. *Syrphus perplexus* ♂, a specimen taken at Searchmont, Ontario, by Mr. E. B. Williamson. The line of demarkation of the area of enlarged facets fades out on the lower border, the usual condition in this species and *arcuatus*, when present at all.

Fig. 5. *Syrphus pyrastris* ♀, a specimen from Seattle, Washington, taken by the author.

Fig. 6. *Syrphus pyrastris* ♂, front view, same specimen as Fig. 1. Note the extreme width of the frons.

Fig. 7. *Syrphus seleniticus* ♂, front view, same specimen as Fig. 2. Note the narrow frons as in other species of *Syrphus*.

Fig. 8. *Syrphus seleniticus*, wing, a specimen sent me by Prof. Bezzi.

Fig. 9. *Syrphus arcuatus*, wing, same specimen as Fig. 3.

STUDIES ON SYRPHIDÆ.—III. AN INTERESTING MERISTIC VARIATION IN SYRPHUS PERPLEXUS.

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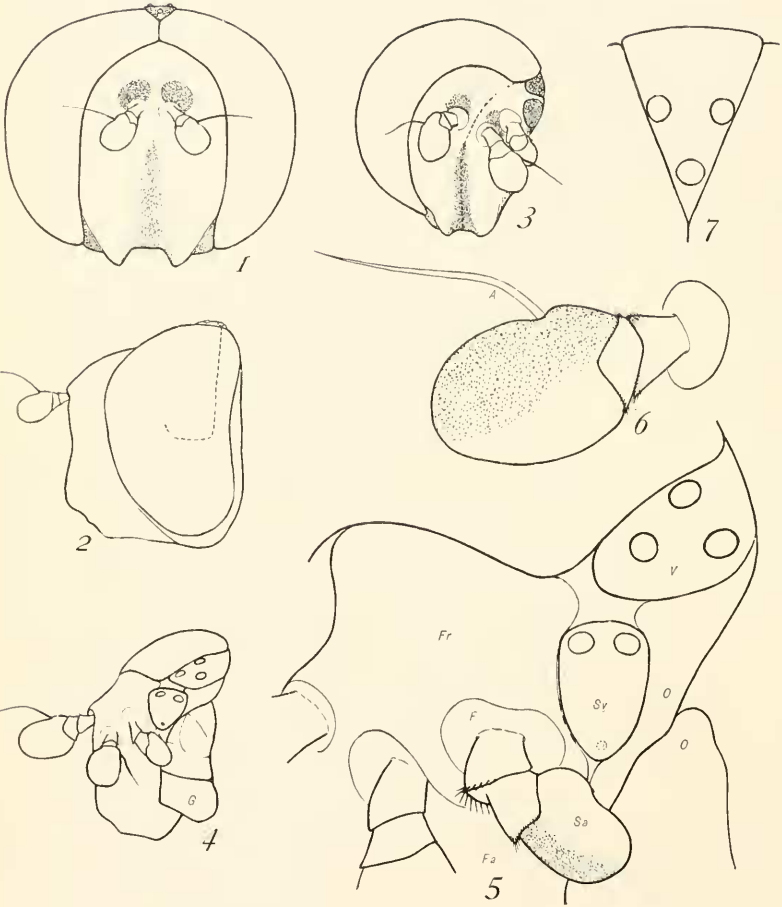
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(WITH PLATE III.)

Meristic variations of different sorts have been recorded not infrequently among insects,* but as far as I have been able to discover, none have been noted which involve the entire suppression of a compound eye and the presence of a complete supernumerary antenna and vertical triangle with ocelli.

The specimen which exhibits these conditions was sent me by Mr.

* Especially Bateson, *Materials for the Study of Variation*.



Syrphidæ.

Gustav Chagnon, of Montreal, Canada, who captured it while collecting other Syrphidæ on Montreal Island, Sept. 1, 1907. Mr. Chagnon writes me that he noticed nothing unusual in the actions of the specimen and that it was taken resting on a leaf in the manner characteristic of many syrphids. I have delayed publishing an account of it while working out the synonymy of *Syrphus arcuatus* Fallén and a related new species, *S. perplexus* Osburn, described in the present number of this journal.† This specimen belongs to *S. perplexus*, and is a normal male in all respects except those to be described.

The main features of abnormality are: (1) The total absence of the compound eye of the left side, (2) the presence of a well-developed supernumerary antenna on the left side, (3) a well-developed supernumerary vertical triangle on the left side, (4) the distortion of the head, especially on the left side, due to the suppression of the eye.

The right side of the head is quite normal in the possession of the proper structures, but it is thrown a little out of balance as a result of the absence of the eye of the opposite side. The eyes of the normal male of this, as of other species of *Syrphus*, are extremely large, covering nearly all of the sides of the head. They meet at the top of the head (the condition known as holoptic) for a large part of their width. The vertical triangle is inserted, wedge-like, between the eyes posteriorly (Pl. III, Figs. 1 and 2). The right eye is normal even to the possession of an area enlarged facets, but the absence of the left eye and the consequent lack of development on that side has caused the eye present to appear to extend beyond the middle of the head. This is evidently due to the warping of the morphological median plane of the head (Fig. 3). The face below is nearly normal except that it is slightly depressed, and the antenna of the right side is about in the usual position. The frons is thrown considerably out of the vertical, and the left normal antenna is somewhat lower down than the right one but is normal in structure (Figs. 3 and 4). The color markings of the face, the facial stripe and the supra-antennal spots, are normal except for the twisting (indicated by the dotted line, Figs. 1 and 3) and that the left supra-antennal spot is reduced in size by the encroachment of the additional antenna (Fig. 3).

The supernumerary antenna is situated slightly behind and above

† Studies on Syrphidæ, I, p. 55.

the normal one of the left side. It is located in a separate fossa in all respects like the normal ones, and consists of the usual three joints. The joints are all slightly, but not very materially, different from the normal ones in shape. The third joint lacks the dorsal arista or bristle, but there is present a small tubercle in the position of the arista (Fig. 5), and this I believe is the rudiment of the arista. In the normal antenna of this species the upper and terminal portions of the third joint are pigmented with black, but in the extra antenna the color pattern is reversed, being dark below and yellow above (cf. Figs. 5 and 6). There is no supra-antennal spot such as is seen above the insertion of the normal antenna. The third antenna is also somewhat smaller than the others.

The vertical triangle is in the normal position, but is somewhat misshapen owing to the absence of the compound eye on the left side, which should compress it into a wedge-like form (as in Fig. 7). It possesses the three ocelli of the usual size and nearly normal arrangement (Fig. 5 v). In addition to this there is a supernumerary triangle (Fig. 5, Sv), situated between the normal one and the supernumerary antenna. It bears two well-developed ocelli, the posterior ones a little smaller than usual, but the anterior ocellus is wanting, unless a small prominence near the anterior end of the triangle is to be considered its rudiment. If such is the case, it is entirely devoid of a lens. The position of this triangle is abnormal in that it is out of the median plane of the head and is turned at a wide angle to this plane, pointing downward on the side of the head. It is situated between the frons and the occiput, thus occupying a portion of the space usually filled by the large compound eye. The frons and the occiput do not quite meet around this triangle, and somewhat membranous areas are left above and below it between the frontal and occipital sclerites.

The occiput is greatly distorted on the left side, as a result of the absence of the eye, and it reaches forward on the side of the head to meet the face. It is much wrinkled, and a deep fold runs diagonally downward and forward across it (Figs. 4 and 5).

The gena or cheek, normally, is completely fused with the occiput, while a shallow suture marks it off from the face. In this specimen the facial suture is much exaggerated and the cheek is also marked off above from the occiput by a deep groove. The cheek is also somewhat distorted (Fig. 4, G).